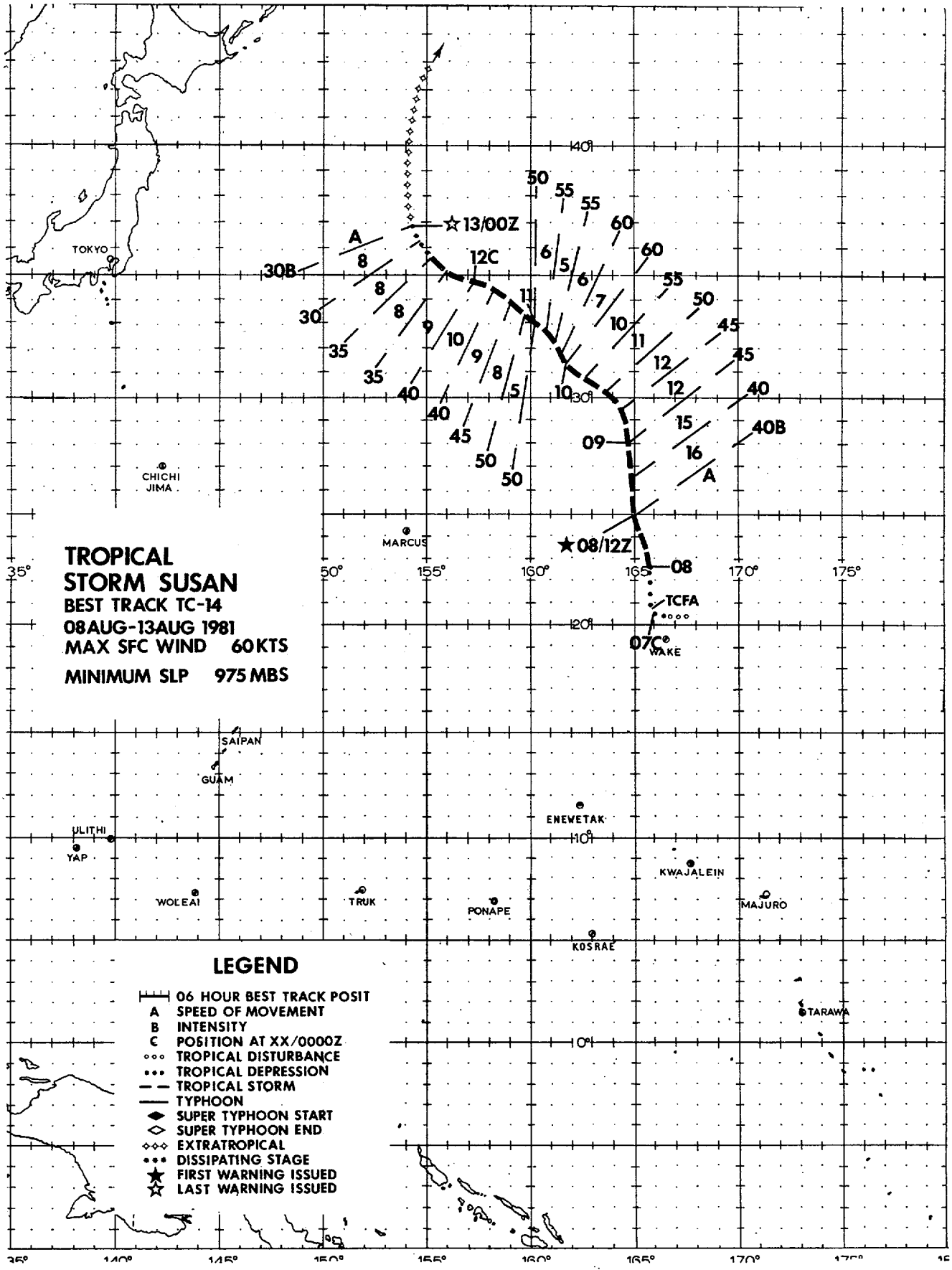
TROPICAL
STORM SUSAN
BEST TRACK TC-14
08AUG-13AUG 1981
MAX SFC WIND 60KTS
MINIMUM SLP 975 MBS
LEGEND
06 HOUR BEST TRACK POSIT
A SPEED OF MOVEMENT
B INTENSITY
C POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
DISSIPATING STAGE
FIRST WARNING ISSUED
LAST WARNING ISSUED
TOKYO
CHICHI JIMA
MARCUS
SAIPAN
GUAM
ULITHI
YAP
WOLEAI
TRUK
PONAPE
ENEWETAK
KWAJALEIN
MAJURO
KOSRAE
TARAWA
WAKE
☆13/00Z
★08/12Z
12C
30B
40B
07C
08
09
TCFA
35°
140°
145°
150°
155°
160°
165°
170°
175°
40°
30°
20°
10°
0°

During the week (27 July-3 August) prior to the formation of Tropical Storm Susan, the monsoon trough had been well established in the West Pacific along 20N. When Tropical Storm Phyllis developed near 26N 147E on 3 August and subsequently moved north, the prevailing low-level southwest flow south of 20N diverged into two channels; one continued north moving with Phyllis, while the other pushed further east to help establish a weak trough in the vicinity of Wake Island (WMO 91245). Tropical Storm Susan formed in this weak trough.

The disturbance that was to become Tropical Storm Susan first appeared on satellite imagery at 062136Z as an exposed low-level circulation approximately 60 nm (111 km) north of Wake Island (Fig. 03-14-1). At the time, the separation of the convection from the surface circulation, due to vertical shear, suggested that only a weak disturbance existed in the area. During the early morning hours prior to this visual satellite sighting, Wake Island had been reporting heavy rainfall with southwest winds as high as 45 kt (23 m/sec); however, it was felt that these reports were more representative of the strong convection in the area than of the exposed surface circulation. When Wake's winds subsided during the next several hours to only 15 kt (8 m/sec), and there was little apparent movement of the circulation center, it was deemed unnecessary to immediately issue a warning of this disturbance. Instead at 0703192Z, a Tropical Cyclone Formation Alert (TCFA) was issued with the expectation that, providing the strong upper level flow across the region subsided, enough convection would develop around the surface circulation for a significant tropical cyclone to form.

During the next 24 hours little changed in the synoptic situation. Although new convection had begun to develop approximately 100 to 150 nm (185 to 278 km) to the north and east of the exposed low-level circulation, 200 mb satellite-derived winds over the region still indicated strong 40 kt (21 m/sec) flow from the north. When the 080015Z aircraft investigative mission could find only 20 kt (10 m/sec) winds in possibly "one of several circulations in the area"[1] (992 mb sea level pressure), it was decided to reissue the formation alert. However by 081200Z, the convection on the periphery of the surface low appeared to have strengthened while satellite imagery indicated that the strong vertical shear had weakened enough for an upper level anticyclone to develop; consequently, the first warning on Tropical Storm Susan was issued.

Initially, Susan tracked north along a trough induced by convection left behind from the passage of Tropical Storm Phyllis a week earlier. Once she reached 30N 164E at 091200Z, Susan did not recurve as originally forecast but turned toward the northwest in response to an approaching weak cold front. It was during this stage that Susan reached her greatest intensity of 60 kt (31 m/sec) (Fig. 3-14-2). By 101800Z the approaching frontal system weakened enough so that Susan no longer responded to its presence. However, cool dry air from the remnants of this front appeared to entrain into the circulation center and by 111200Z very little convection remained. Susan next turned toward the west-northwest in response to a new frontal system coming off Japan (also increasing its convective activity). This time, however, the frontal system did not weaken before reaching Susan; and by 130000Z Tropical Storm Susan had become completely entrained into the front and quickly made the transition into an extratropical system.

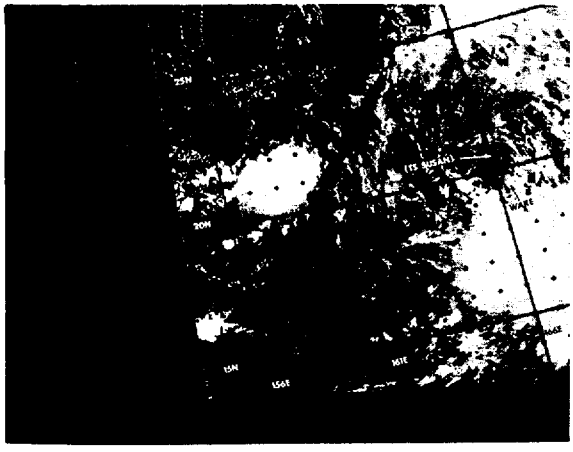

Figure 3-14-1. The initial stages of Tropical Storm Susan just north of Wake Island at 6 August 2136Z. (NOAA 6 visual imagery)

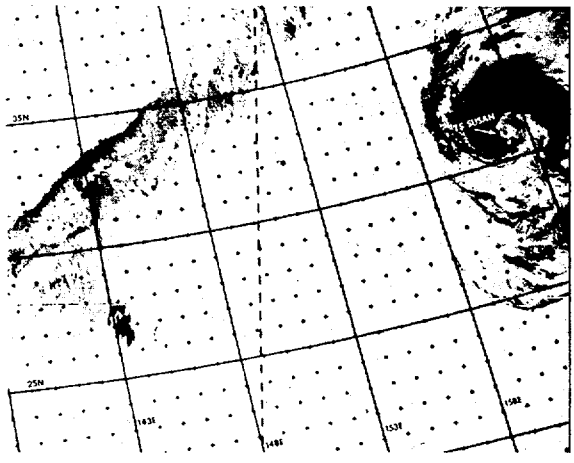

Figure 3-14-2. Tropical Storm Susan just prior to peak intensity on 9 August 2208Z. Note how the convection is displaced from the circulation center. A weak cold front can be seen approaching from the northwest. (NOAA 6 infrared imagery)

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